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West Palaearctic species of the *Hercostomus* species-group III (Diptera, Dolichopodidae), with description of a new species from Turkey

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Abstract

The West-Palaearctic species of the *Hercostomus* species-group III are reviewed, a species-list and a revised key to males is provided. *Hercostomus angustus* (Loew, 1857) is restored from synonymy with *Hercostomus nanus* (Macquart, 1827) based on differences in male genitalia. *Hercostomus griseifrons* Becker, 1910 is redescribed and a lectotype is designated. *Hercostomus tonguci* **sp. n.** is described from Turkey.

Key Words

Dolichopodidae
Hercostomus
West-Palaearctic
review
new species

Introduction

Hercostomus Loew, 1857 is a large genus containing more than 483 species worldwide (Grichanov 2017). The genus is a polyphyletic assemblage within the Dolichopodinae (Brooks 2005). The Palaearctic species were traditionally separated in five groups based on the colouration of femora, postocular setae and antennae (Stackelberg 1933, Parent 1938). Recent keys to species Groups I-V were provided by: Negrobov et al. (2008), Negrobov and Nechay (2009a, b), Negrobov et al. (2012), and Selivanova et al. (2012).

The traditional definition of Palaearctic species-groups of *Hercostomus* is based on the following characters:

- Femora yellow; lower postocular setae yellow or white; antennae partly yellow..... **species-group I**
- Femora yellow; lower postocular setae yellow or white; antennae black ..... **species-group II**
- Femora yellow; lower postocular setae black .... **species-group III**
- Femora black; lower postocular setae yellow or white... ..... **species-group IV**
- Femora black; lower postocular setae black..... .....**species-group V**

In this work a species list and a revised key to the species-group III is provided, and a new species from Turkey is described.

Material and methods

The material examined is from the collection of the Czech University of Life Sciences Prague (CULSP) and from the University of Berlin (Museum für Naturkunde, Leibniz-Institute for Evolution and Biodiversity Science). Distribution data are taken mainly from Pollet (2004) and Yang et al. (2006), but doubtful records are omitted.

Body length is measured from the base of the antennae to the tip of abdominal segment 6; wing length from wing

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base to wing apex. The positions of features on elongate structures such as leg segments are given as a fraction of the total length, starting from the base. The following ratios are used: relative podomere ratios: femur, tibia, tarsomere 1/2/3/4/5; length of crossvein dm-cu to distal section of CuA (= CuAx ratio); distance between veins R_{2+3} and R_{4+5} to distance between R_{4+5} and M at costal margin (= RMx ratio). Describing the hypopygium, dorsal and ventral refer to the position prior to rotation and flexion, i.e. in figures top is morphologically ventral and bottom is dorsal. If not otherwise indicated, the coloration of hairs and setae is black. Morphological terminology follows Cumming and Wood (2009), except for male genitalia which follows Brooks (2005).

Morphological abbreviations: ac = acrostichal setae; ad = anterodorsal; apv lobe = apicoventral epandrial lobe; av = anteroventral; dc = dorsocentral setae; pd = posterodorsal; ppls = proepisternal setae; pv = posteroventral.

Systematic account

Description of the new species

Hercostomus tonguci sp. n.

http://zoobank.org/E89D5E91-509F-4DDB-9A33-8F5C99F5EA6A
Figs 1-4

Type material. Holotype male: Turkey, Akyaka, river banks, salty meadow, 37°03'16"N, 28°19'57"E, 16.–27.v.2011, Barták & Kubíc (CULSP).

Diagnosis. Antenna black, postpedicel as long as high; arista dorsoapical; face narrow, with dense grey pruinosity; lower postocular setae black; abdominal segments 1-3 with yellow lateral spot; legs including coxae yellow; veins R_{4+5} and M parallel; CuA about 2.5 times as long as crossvein dm-cu; cercus yellow, with claw-like apical setae.

Description. Male. Body length (holotype): 2.2 mm, wing length 2.2 mm. **Head**: frons metallic green, with dense white pruinosity; face (Fig. 2) with dense grey pruinosity, narrowest distance between eyes about as distance between ocellar setae; palpus yellow; proboscis yellowish brown; antennal segments black; postpedicel (Fig. 3) as long as high; arista apicodorsal, pubescent, inserted near apex, apical segment 8 times as long as basal segment; lower postocular setae black. **Thorax**: mesonotum bright metallic green, with some grey pruinosity; thoracic setae black; 6 pairs of strong dc; 9–10 pairs of long ac; scutellum with 2 strong marginal setae, without lateral setae; 1 strong black ppls; pleura dark metallic green, with grey pruinosity. **Legs**: including coxae yellow, hind tarsomeres infuscated, setae and hairs black. Fore leg: coxa with some strong anterior setae; femur, tibia and tarsomeres bare; relative podomere ratios: 42:43:24:12:10:7:6. Mid leg: coxa with some anterior and a strong anterolateral setae; femur with a small anterior preapical seta; tibia with 2 small ad, 3 small pd, and a circlet of apical setae; relative podomere ratios: 50:55:29:16:13:8:7. Hind leg: coxa with a strong lateral seta; femur with a small anterior preapical seta; tibia slightly swollen in distal part, with 2 small ad and 3-4 small pd setae, and with a circlet of small apical setae; relative podomere ratios: 57:68:15:25:15:10:7. **Wing:** hyaline, veins dark brown; basal section of M shorter than distal section; R_{3+4} and M parallel; M joining costa posteriad of apex; CuAx ratio: 0.35; RMx ratio: 1.45; lower calypter yellowish-white, with brown setae; halter yellowish-white. **Abdomen:** metallic green shining, with black hairs and setae; tergite 1-3 with a large yellow lateral spot, tergite 8 dark brown. Hypopygium (Fig. 4): epandrium dark brown; cercus yellowish-white, apical border brownish infuscated, with 2 strong, claw-like apical setae in addition to the simple apical and marginal setae; hypandrium dark brown; apicoventral epandrial lobe yellowish-white, with 3 long, sinuate apical setae; surstyli yellowish-white. **Female:** unknown.

Etymology. The new species is dedicated to the Turkish dipterist and Dolichopodidae worker Alper Tonguç.

Remarks. *H. tonguci* belongs to the species-group III according to Stackelberg (1933) which is defined by the following characters: femora yellow, postocular setae black. In the recent key to Palaearctic species of the species-group III (Selivanova et al. 2012) the new species runs to *H. acutangulatus* Yang & Saigusa, 1999 described from China based on the yellow lateral spots on the abdomen. *H. tonguci* can be distinguished as follows: mesonotum without yellow coloration, first flagellomere as long as high, cercus apically with claw-like setae; wing length 2.2 mm. In *H. acutangulatus* the mesonotum is partly yellow, the postpedicel is 1.6 times as long as high, the cercus has no claw-like setae apically, and the wing length is 5 mm.

Species list of the *Hercostomus* species-group III in the West-Palaearctic

*angustus (*Loew, 1857) (stat. resurr.)

Gymnopternus angustus Loew, 1857: 17.

Type locality. Asia Minor,“ Kleinasien”.

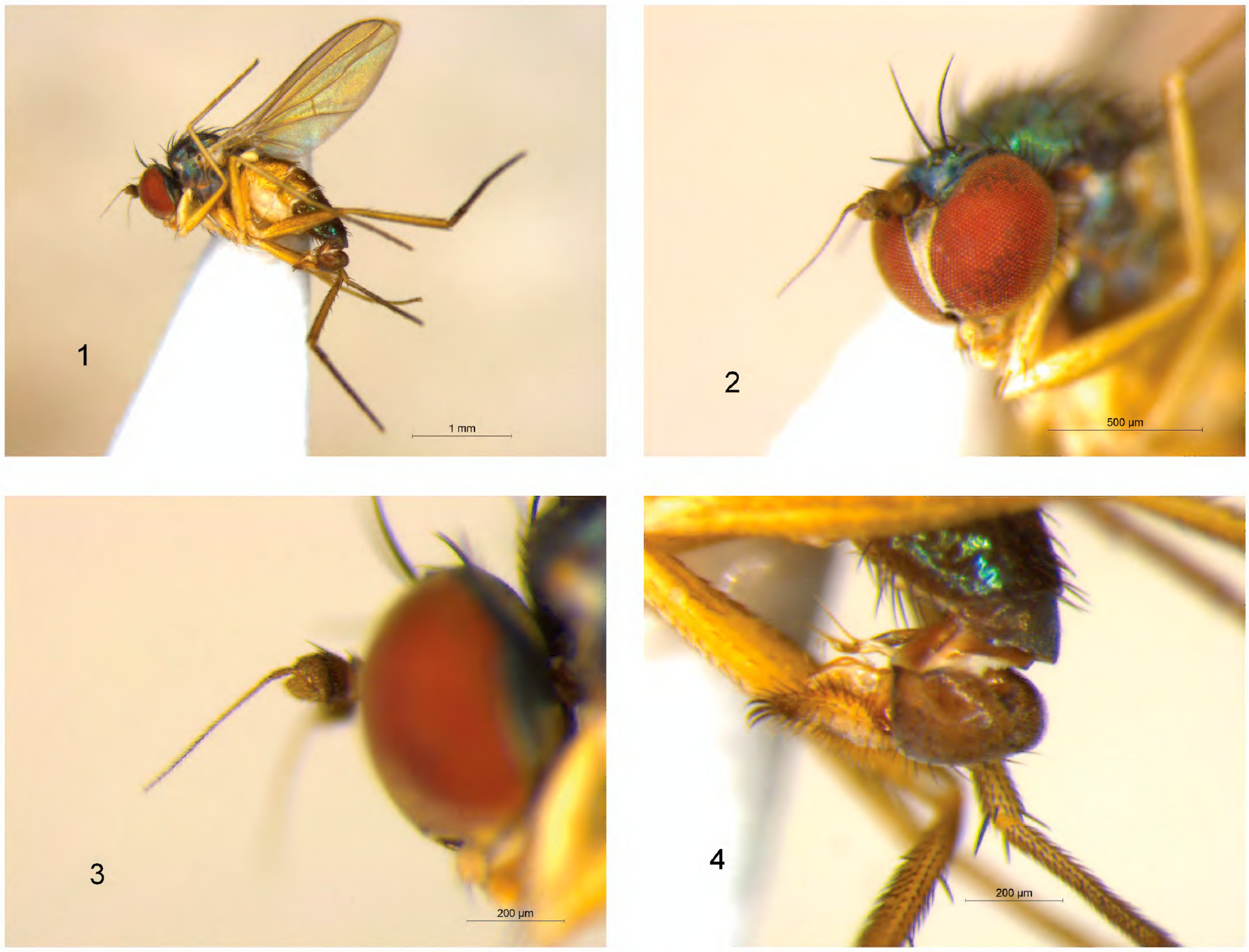
When studying the types at the University of Berlin, the species is restored from synonymy with *H. nanus* based on differences in the male genitalia.

chetifer (Walker, 1849)

Porphyrops chetifer Walker, 1849: 653.
Dolichopus alutifer Haliday, 1851: 179.
Porphyrops cretifer Walker, 1856: 653.
Paraclius ornatus Van Duzee, 1921: 128.
Hercostomus dreisbachi Harmston & Knowlton, 1945: 80.

Type locality. England

Distribution. Austria, Belgium, Bosnia and Herzegovina, Czech Republic, England, Finland, France, Germany,



Figures 1–4. *Hercostomus tonguci* sp. n. holotype: **1**, habitus, left lateral; **2**, head, left lateral; **3**, antenna, left lateral; **4**, hypopygium, left lateral.

Greece, Hungary, Italy, Luxembourg, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine. Nearctic: Canada, USA. Oriental: India.

griseifrons Becker, 1910

Hercostomus griseifrons Becker, 1910: 649

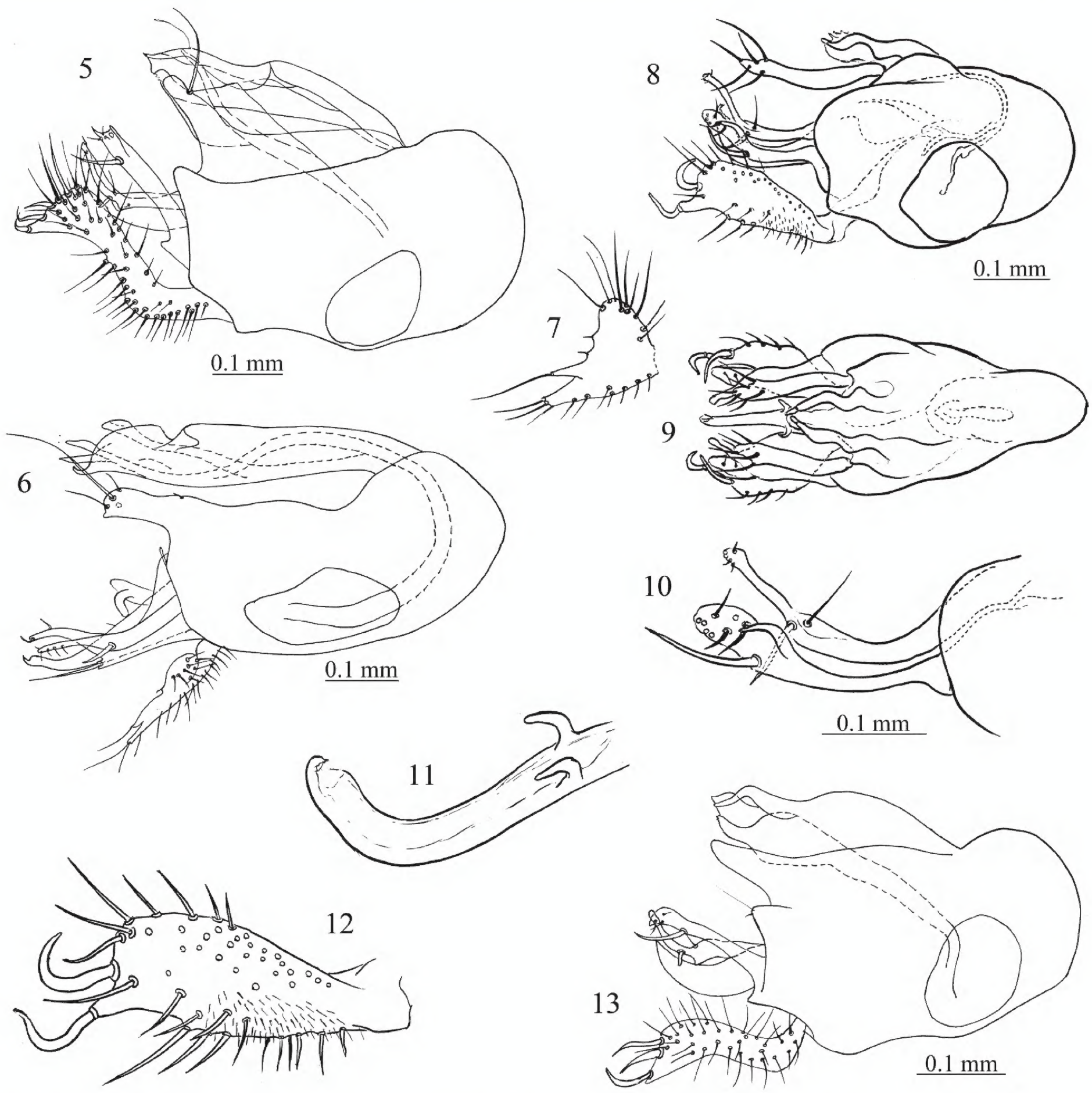
Type locality. France (Corsica).

Distribution. France, Germany, Italy, Ukraine.

Redescription of *Hercostomus griseifrons* based on type material (Museum für Naturkunde, Leibniz-Institute for Evolution and Biodiversity Science). Since Becker has not designated a holotype, a lectotype is designated on order to stabilize the nomenclature.

Lectotype: 1 ♂, Corsika, 54652, V. Paralectotype: 13 ♂, 9 ♀, same data, 54652, V und 55290 VI **(pres design.).**

Redescription. ***Male.*** Body length 2.4 mm, wing length 2.3 mm. **Head**: frons metallic green, shiny, with slightly white pruinosity. Face silvery white. Postocular cilia in the lower part of the head dark. Proboscis brown, palpus dark brown. Antennae brown. Postpedicel big oval, pubescent with short white hairs, length more than the width. Arista dorsal, located closer to the base of the postpedicel, glabrous. The ratio of the length of the scape and pedicel to the length of the postpedicel: 2.1: 2.9: 2.4. **Thorax**: mesonotum metallic green, shiny. Pleura greenish-brown, with gray pruinosity. Scutellum from above bare, along the margin of the scutellum there are a few small hairs, with two strong marginal setae and one small lateral seta. ppls with 1 strong black seta and a group of light hairs. **Legs:** yellow, hind femur in apical part black. Fore tibia with 1 ad seta, without a series of anterior hairs. Fore tibia and tarsomeres relative podomere ratios: 5.3: 2.4: 1.0: 0.8: 0.5: 0.8. Mid and hind femora with one strong black preapical seta. Mid tibia with 2 ad, 2 pd setae. Mid tibia and tarsomeres relative podomere ratios: 7.3: 3.3: 1.6: 1.8: 0.8: 0.9. Hind tibia with 2 ad and 2 dorsal setae. Hind tibia and tarsomeres relative podomere ratios: 8,8: 1,9: 2,6: 1,7: 1,2: 1,0. **Wing:** The costal vein at the junction with R_1 not thickened. The ratio of the length of the segment of the costal vein between R_{2+3} and R_{4+5} to the length of the segment of the same vein between R_{4+5}



Figures 5–13. **5**, *Hercostomus angustus*, holotype; **6**, **7**, *Hercostomus chetifer*; **8-12**, *Hercostomus griseifrons*, lectotype; **13**, *Hercostomus nanus* (**5, 6, 8, 13**- hypopygium, lateral, **7, 12**- cercus, ventral, **9**- hypopygium, ventral, **10**- surstyli, lateral, **11**- phallus, ventro-lateral).

and M 2.1: 0.7. Apical part of R_{4+5} and M smoothly bent, converging in the apical part of the wing. Basal section of M slightly longer than distal section 8.5: 8.4. dm-cu straight, located in the middle of the wing. The ratio of the length of the basal segment of CuA to the length of the apical segment of the same vein: 6.4: 3.6. The apical segment of CuA is 1.5 longer than crossvein dm-cu. Anal wing of the wing is developed. The anal corner is blunt. Halter yellow. Lower calypter yellow, with black setae. **Abdomen:** The abdomen is metallic-green, shiny, with black setae and hairs. Hypopygium brown. Epandrium oval, its length is longer than the width, the apical part is almost straight. Cercus expanded in apical part, their length is more than twice the width.

Female: differs from the male by a broader face and a more intense darkening of the apex of the hind femora.

nanus (Macquart, 1827)

Dolichopus nanus Macquart, 1827: 66.
Dolichopus minimus Zetterstedt, 1849: 3088.

Type locality. France.

Distribution: Belgium, Bulgaria, Czech Republic, Denmark, England, France, Germany, Hungary, Ireland, Italy, Moldova, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Turkey, Ukraine.

separatus d'Assis Fonseca, 1976

Hercostomus separatus d'Assis Fonseca, 1976: 27

Type locality. Croatia.

Distribution. Romania, Croatia.

Key to West-Palaearctic species of the *Hercostomus* species-group III (males)

1 Fore tarsomeres 3 and 4 broadened and black; fore tarsomere 5 white 2
– Fore tarsomeres simple 3
2 Fore tarsomere 2 shorter than tarsomeres 3-5 combined ..... *H. separatus* d'Assis Fonseca
– Fore tarsomere 2 longer than tarsomeres 3-5 combined ..... *H. chetifer* Walker
3 Abdominal segments 1-3 with yellow lateral spot; veins R_{4+5} and M parallel in apical part; first flagellomere as long as high; cercus oval, apically rounded, yellow ..... *H. tonguci* sp. n.
– Abdominal segments without yellow lateral spot; veins R_{4+5} and M converging in apical part; first flagellomere at least 1.5 times as long as high 4
4 Hind femora in apical part black; cercus oval, apically broadened, black ..... *H. griseifrons* Becker
– Femora yellow; cercus ribbon-like, yellow 5
5 Cercus about 4 times longer than its width; ventral part curved; apically without dorsal dentate process ..... *H. nanus* Macquart
– Cercus about 6 times longer than its width; ventral part straight, apically with dorsal dentate process ..... *H. angustus* Loew

Discussion

Originally the *Hercostomus* species-group III was more expanded including species now transferred to other genera. The genus *Gymnopternus* Loew, 1857 earlier treated as synonym or subgenus of *Hercostomus* is now accepted as a separate genus (Brooks 2005). The West Palaearctic species *Hercostomus chalybeus* (Wiedemann, 1817) was transferred to the genus *Ethiromyia* Brooks & Wheeler, 2005.

Becker (1917) stated that *H. nanus* and *H. chetifer* have lower postoculars yellow or black and thus he listed both species twice in his key. I have examined series of *H. nanus* and *H. chetifer* from different localities in Europe but could not find specimens with yellow lower postocular setae, although there could be the illusion of yellowish-brown setae depending on light reflections. Stackelberg (1933) and subsequent workers omitted *H. nanus* in the male key of species-group III but included it in species-group II.

Moreover, it should be noted that in the current key to Palaearctic species of the *Hercostomus* species-group III (Selivanova et al. 2012) *H. separatus* d'Assis Fonseca, 1976 and *H. nanus* (Macquart, 1827) are lacking.

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